

CLAIMS

We claim:

1. A floor cleaning apparatus comprising:
a housing with a bottom portion that is adapted to rest on a surface being cleaned and a carriage assembly support above an opening in an underside of the housing;
5 a fluid delivery system mounted to the housing and including a fluid distributor for delivering a cleaning fluid to the surface to be cleaned beneath the opening in the underside the housing;
a fluid extraction system including a suction nozzle for recovering soiled cleaning fluid from the surface to be cleaned beneath the opening in the
10 underside of the housing; and
a carriage mounting the fluid distributor and the suction nozzle to the carriage assembly support for translational movement with respect to the housing so that the suction nozzle and the fluid distributor move laterally with respect to the surface to be cleaned.
2. A floor cleaning apparatus according to claim 1 and further including a scrubbing implement mounted to the carriage for movement with the fluid distributor and the suction nozzle and for scrubbing contact with the surface to be cleaned.
3. A floor cleaning apparatus according to claim 2 wherein the scrubbing implement, the fluid distributor, and the suction nozzle move as a unit with respect to the housing.
4. A floor cleaning apparatus according to any of claims 1-3 wherein the translational movement is orbital.
5. A floor cleaning apparatus according to claim 4 wherein the carriage comprises a gear system for motion of the fluid distributor and the suction nozzle with respect to the housing.

6. A floor cleaning apparatus according to any of claims 1-3 wherein the translational movement is linear.
7. A floor cleaning apparatus according to any of claims 1-3 wherein the translational movement is circular.
8. A floor cleaning apparatus according to claims 2 or 3 wherein the scrubbing implement is a brush.
9. A floor cleaning apparatus according to claims 2 or 3 wherein the scrubbing implement is a cloth.
10. A floor cleaning apparatus according to claims 2 or 3 wherein the scrubbing implement is a foam pad.
11. A floor cleaning apparatus according to any of claims 1-3 wherein the distributor comprises at least one spray nozzle.
12. A floor cleaning apparatus according to any of claims 1-3 wherein the distributor is a manifold with spaced openings.
13. A floor cleaning apparatus according to any of claims 1-3 wherein the suction nozzle is L-shaped.
14. A floor cleaning apparatus according to any of claims 1-3 wherein the suction nozzle is T shaped.
15. A floor cleaning apparatus according to any of claims 1-3 and further comprising a motor mounted to the housing and connected to the carriage for driving the translational movement of the carriage with respect to the housing.
16. A floor cleaning apparatus according to claim 15 and further comprising a power supply for the motor carried by the housing and a controller mounted to the housing and to the motor for controlling the power supply to the motor.

17. A floor cleaning apparatus according to claim 16 wherein the controller is programmed to supply power to the motor for a first predetermined period of time and to discontinue power to the motor for a second predetermined period of time.

18. A floor cleaning apparatus according to any of claims 1-3 wherein the fluid supply system comprises a first fluid tank with an outlet opening and a second fluid tank with an outlet opening, wherein the outlet openings of the first fluid tank and the second fluid tank are connected to supply a mixture of first and second fluids
5 from the first fluid tank and the second fluid tank to the fluid distributor.

19. A floor cleaning apparatus according to claim 18 wherein the outlet openings of the first fluid tank and the second fluid tank are connected through a mixing valve.

20. A floor cleaning apparatus according to claim 19 and further comprising a controller mounted to the housing and connected to the mixing valve, and the controller is programmed to control the relative amounts of the first and second fluids combined in the mixing valve.

21. A floor cleaning apparatus according to claim 20 wherein the controller is programmed to control the mixing valve to deliver a predetermined concentration of the first fluid and the second fluid to the fluid distributor for a first predetermined length of time and to deliver only the second fluid for a rinse cycle for
5 a second predetermined length of time.

22. A floor cleaning apparatus according to claim 21 wherein the fluid supply system further comprises a controllable flow valve or a controllable pump between the mixing valve and the fluid distributor and the controller is connected to the controllable flow valve or controllable pump to control the flow of fluid from the
5 mixing valve to the fluid distributor.

23. A floor cleaning apparatus according to claim 22 wherein the controller is programmed to open the flow control valve or operate the pump during a

third predetermined period of time and to close the flow control valve or cease operation of the pump during a fourth predetermined period of time.

24. A floor cleaning apparatus according to any of claims 1-3 wherein the fluid extraction system further comprises a hose connected at one end to the housing and at another end to a surface cleaning tool for extraction of fluids from surfaces other than beneath the opening in the underside of the housing.

25. A floor cleaning apparatus according to claim 24 wherein the fluid supply system further includes a fluid supply conduit associated with the hose and connected to the surface cleaning tool for delivering fluids to areas other than beneath the opening in the underside of the housing.

26. A floor cleaning apparatus according to any of claims 1-3 and further comprising a cord wrap element mounted to the housing for movement between an extended position for wrapping an electrical cord in a compact configuration and a retracted position for concealing the cord wrap element.

27. A floor cleaning apparatus according to any of claims 1-3 and further comprises a resilient biasing element between the carriage and the carriage assembly support for resiliently biasing the suction nozzle and the scrubbing implement, if any, onto the surface to be cleaned.

28. A floor cleaning apparatus according to claim 26 wherein the biasing force of the biasing element is less than the weight of the housing.

29. A floor cleaning apparatus according to any of claims 1-3 and further comprising an ion generator mounted on the housing.

30. A floor cleaning apparatus according to claim 1 and further comprising a sonic generator mounted to the housing for directing sound waves to the surface to be cleaned at a frequency that loosens debris from the surface.

5 31. A floor cleaning apparatus according to claim 1 and further comprising a plurality of condition floor sensors mounted to the housing for detecting the level of

soil on the floor to be cleaned and for generating a control signal representative thereof.

- 10 32. A floor cleaning apparatus comprising:
 a housing;
 a fluid delivery system mounted to the housing and including a fluid distributor for delivering a cleaning fluid to the surface to be cleaned beneath an opening in the underside the housing;
15 a fluid extraction system including a suction nozzle for recovering soiled cleaning fluid from the surface to be cleaned beneath the opening in the underside of the housing; and
 a cord wrap element mounted to the housing for movement between an extended position for wrapping an electrical cord in a compact configuration and a
20 retracted position for concealing the cord wrap element.

33. A floor cleaning apparatus comprising:
 a housing;
 a fluid delivery system mounted to the housing and including a fluid distributor for delivering a cleaning fluid to the surface to be cleaned beneath an
5 opening in the underside the housing;
 a fluid extraction system including a suction nozzle for recovering soiled cleaning fluid from the surface to be cleaned beneath the opening in the underside of the housing; and
 an ion generator mounted on the housing and having an inlet and an
10 outlet separate from the extraction system.